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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,224	02/15/2002	Dong-Ha Shim	030681-359	7856

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EXAMINER

MANDALA, VICTOR A

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 08/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/075,224

Applicant(s)

SHIM, DONG-HA

Examiner

Victor A Mandala Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. Figures 3, 4, and 5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's Admitted Prior art.

2. Referring to claim 1, a MEMS device having flexible elements with nonlinear restoring force comprising, (Applicant's Admitted Prior Art Figure 1): a substrate, (1); support elements, (4), formed on the substrate, (1); a moveable element, (2 or Figure 3 #30), floated over the substrate, (1), by the support elements, (4), so as to move; flexure elements, (3), for elastically suspending the moveable element, (2 or Figure 3 #30), on the support elements, (4), a driving

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element, (Figure 3 #52), for moving the moveable element, (2 or Figure 3 #30); repulsive elements, (Figure 5 shows that the displacement is a variable in figuring out the repulsive force. It would be apparent that the displacement is an element in factoring the repulsive force), for increasing the repulsive force of the flexure elements, (3), when the flexure elements, (3), supporting the moveable element, (2 or Figure 3 #30), are resiliently deformed by a predetermined amount, (Figure 4 #40), during movement of the moveable element, (2 or Figure 3 #30).

3. Referring to claim 5, the MEMS device, wherein the moveable element moves in a direction perpendicular to the plane of the substrate, (Applicant's Admitted Prior Art Page 2 Line 4 of the Application).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,307,452 Sun.

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4. Referring to claim 1, a MEMS device having flexible elements with nonlinear restoring force comprising: a substrate, (Sun's Figure 5A #12); support elements, (Sun's Figure 5A #24), formed on the substrate, (Sun's Figure 5A #12); a moveable element, (Sun's Figure 5A #20), floated over the substrate, (Sun's Figure 5A #12), by the support elements, (Sun's Figure 5A #24), so as to move; flexure elements, (Sun's Figure 5A #22), for elastically suspending the moveable element, (Sun's Figure 5A #20), on the support elements, (Sun's Figure 5A #24), a driving element, (Sun's Figure 5A #14), for moving the moveable element, (Sun's Figure 5A #20); repulsive elements, (Col. 4 Lines 17-19), for increasing the repulsive force of the flexure elements, (Sun's Figure 5A #22), when the flexure elements, (Sun's Figure 5A #22), supporting the moveable element, (Sun's Figure 5A #20), are resiliently deformed by a predetermined amount, (Sun's Figure 5B shows the flexure elements deformed while in the on state), during movement of the moveable element, (Sun's Figure 5A #20).

5. Referring to claim 2, the MEMS device, wherein the repulsive elements having a predetermined size include stoppers, (Sun's Figure 5A # 26), positioned between the flexure elements, (Sun's Figure 5A #22), and static elements, (Sun's Figure 5A #14 & 20), fixed on the substrate, (Sun's Figure 5A #12), opposite to the flexure elements, (Sun's Figure 5A #22).

6. Referring to claim 3, the MEMS device, wherein the stoppers, (Sun's Figure 5A #26), are positioned at portions of the static elements, (Sun's Figure 5A #14 & 20), opposite to the flexure elements, (Sun's Figure 5A #22), so that middle portions of the flexure elements, (Sun's Figure 5A #22), contact stoppers, (Sun's Figure 5A #26), when the flexure elements, (Sun's Figure 5A #22), are resiliently deformed by a predetermined amount, (Sun's Figure 5B shows the flexure elements deformed in the on state).

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7. Referring to claim 4, the MEMS device, wherein the stoppers, (Sun's Figure 5A #26), are formed on middle portions of the flexure elements, (Sun's Figure 5A #22), opposite to the static elements, (Sun's Figure 5A #14 & 20), so that the stoppers, (Sun's Figure 5A #26), contact the static elements, (Sun's Figure 5A #14 & 20), when the flexure elements, (Sun's Figure 5A #22), are resiliently deformed by a predetermined amount, (Sun's Figure 5B shows the flexure elements deformed and the contact of the stoppers with #20).

8. Referring to claim 5, the MEMS device, wherein the moveable element, (Sun's Figure 5A #20), moves in a direction perpendicular to the plane of the substrate, (Sun's Figure 5A #12), (Sun shows the moveable element to move in the perpendicular to the plane of the substrate in Figures 5A & 5B, which show the on and off states of the circuit).

9. Referring to claim 6, the MEMS device, wherein the moveable element, (Sun's Figure 5A #20), moves in a direction perpendicular to the plane of the substrate, (Sun's Figure 5A #12), (Sun shows the moveable element to move in the perpendicular to the plane of the substrate in Figures 5A & 5B, which show the on and off states of the circuit).

10. Referring to claim 7, the MEMS device, wherein the moveable element, (Sun's Figure 5A #20), moves in a direction perpendicular to the plane of the substrate, (Sun's Figure 5A #12), (Sun shows the moveable element to move in the perpendicular to the plane of the substrate in Figures 5A & 5B, which show the on and off states of the circuit).

11. Referring to claim 8, the MEMS device, wherein the moveable element, (Sun's Figure 5A #20), moves in a direction perpendicular to the plane of the substrate, (Sun's Figure 5A #12), (Sun shows the moveable element to move in the perpendicular to the plane of the substrate in Figures 5A & 5B, which show the on and off states of the circuit).

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*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor A Mandala Jr. whose telephone number is (703) 308-6560. The examiner can normally be reached on Monday through Thursday from 8am till 6pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

VAMJ  
July 31, 2002

NATHAN J. FLYNN  
SUPERVISORY PATENT EXAMINER  
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